

IN THE CLAIMS:

1. (Currently Amended) A variable optical delay line having an extended ~~with a large~~ continuous tuning range, comprising:

~~an incrementally incremental~~ variable optical delay line configured to delay a received ~~for receiving an optical signal by an incremental delay length selected from a sequence of discrete delay lengths which differ in length by multiples of a delay increment to provide the optical signal with a delay selected from a sequence of incrementally differing delays; and~~

~~serially optically coupled with the incremental delay line; a continuously variable optical delay line, coupled by an optical coupling to said incrementally variable optical delay line, configured to delay said received optical signal by a continuous delay length selected from a continuum of delay lengths having a range substantially encompassing said delay increment,~~

~~wherein said optical coupling is a serial coupling such that said incremental delay length is added to said continuous delay length to provide a range of selectable delay lengths that is continuous over a range that substantially encompasses said sequence of discrete delay lengths~~

~~for receiving the optical signal to provide a continuous delay from a range of delays substantially encompassing a delay increment in the incremental delay line.~~

2. (Currently Amended) The variable delay line of claim 1 wherein the incrementally variable optical ~~incremental~~ delay line further comprises ~~a plurality of optical paths having incrementally different optical path lengths and an optical switch for switching the optical signal to the incremental delay a path of selected path length.~~

3. (Currently Amended) The variable delay line of claim 1 ~~2~~ wherein the sequence of discrete delay lengths ~~plurality of optical paths~~ comprise a set of paths having at least one region of

parallel paths and a second region wherein each path differs in curvature to produce incrementally different path lengths

4. (Currently Amended) The variable delay line of claim 1 wherein the continuously variable optical delay line comprises an all pass optical filter.

5. (Original) The variable delay line of claim 4 wherein the all pass filter comprises a multistage all pass filter comprising a plurality of ring resonators optically coupled to an optical waveguide.

6. (Currently Amended) The variable delay line of claim 1 wherein the continuously variable optical delay line comprises a chirped grating.

7. (Currently Amended) The variable delay line of claim 2 wherein the continuously variable optical delay line comprises an all pass optical filter.

8. (Currently Amended) The variable delay line of claim 3 wherein the continuously variable optical delay line comprises an all pass optical filter.

9. (Currently Amended) The variable delay line of claim 3 wherein the continuously variable optical delay line comprises a multistage all pass optical filter comprising a plurality of ring resonators optically coupled to an optical waveguide.

10. (New) The variable delay line of claim 1 wherein the continuously variable optical delay line receives the optical signal before the incrementally variable optical delay line.